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[From the German of Kohler.]

Practical Bee-Culture.

RE-QUEENING AND FALL REDUCTION.

In a recent communication to the *Bienenzeitung*, the Baron of Berlepsch states the result of a carefully arranged experiment which shows that, at least *five or six weeks elapse from the time the egg is hatched till the worker bee engages actively in the gathering of honey;* or, in other words, becomes converted from a *consumer* to *a producer*. I made similar observations last summer, and some memoranda in my possession made prior to the publication of the Baron's article, coincide very precisely with the results obtained by the latter. Though my observations were not made with the view of establishing or maintaining any *theoretical* proposition, yet *practically* I had often to wait a wearisome while before I could see workers, hatched from the eggs of a newly reared Italian queen, fly and participate in the out-door labors of the older bees. Yea, like the Baron of Berlepsch, I have counted hours and days, and when, as frequently happens in the case of a young queen, we have to enumerate "thirty-five," or "thirty-six" days, we hardly need note down the number in the diary in order to impress the fact on the memory.

But, why advert to this matter *here*, on pages dedicated primarily to suggestions and counsels of practical import? Patience, gentle reader; we shall in due time see the practical value of the theoretical proposition referred to. In practice it is, indeed, of far greater significance than seems apparent at first blush, or than the unobservant would imagine. Still, we will now refer to two cases only in which the question —*how much time elapses from the hatching of the egg till the workers gather honey?* deserves special consideration from the bee-keepers who would not suffer disadvantage and loss without becoming conscious of the fact, or even suspecting the truth.

There is hardly any bee-keeper who is not occasionally surprised by finding a queenless colony in his apiary. Nay, it will happen even to the most competent, that days and even weeks elapse before he becomes aware of the queenlessness of a stock. The deportment of the bees at the loss of their queen, and the phenomena indicating queenlessness, are not always the same, or are not always manifested in the same decided and striking manner; or those manifestations are made when the keeper's attention is drawn elsewhere; and finally he finds himself suddenly, he knows not how, the owner of a queenless colony. Now the question forces itself on him—*what is to be done?* If *he* does not take the case in hand, and that right speedily, the robbers and moths certainly will, and make short work of the job too;—leaving him a hive bare of bees and honey, but rich in the larvæ and coccoons of the moth! Think not that I am exaggerating. My own eyes have seen such a scene of thorough and utter devastation. I once designedly consigned such a queenless colony to its fate. The experiment cost me nearly twenty pounds of honey and sixteen combs of wax, without counting the vexation, and the time and labor required to cleanse the hive again, and exterminate the multitudinous horde of devourers, more greedy and insatiable than the horse-leech's daughters. The experiment was nevertheless interesting and instructive, as demonstrating the necessity of prompt action when a colony becomes queenless. But, the inquiry recurs—what is to be done in such a case? *Cure* or *kill*, that is the question! Most of our bee-writers would doubtless advise the former; but the theoretical principle demonstrated and enunciated by the Baron of Berlepsch, indicates clearly that recourse to the latter expedient would be, in the great majority of cases, clearly the more judicious and advisable course. In two cases only, would recourse to curative means seem at all advantageous—first, namely, while the bee-keeper is still intent on increasing the number of stocks; and secondly, while engaged in italianizing his apiary. In the latter case, the occurrence of queenlessness, if speedily discovered, may exempt him from the trouble and annoyance of hunting and removing the old queen—being thus rather advantageous than disadvantageous. But in every other case, the only advisable process, is to *break up the colony at once*,

using the bees to strengthen some weak stock, and giving the combs to a strong colony for protection or use. However much this may run counter to the feelings of the bee-keeper, it will certainly best advance the prosperity of his apiary, and thus promote his pecuniary interest.

Cure should only be attempted if a *fertile reserve queen* be immediately available, and *at least eight weeks of good pasturage may yet be expected.* In such case the young bees proceeding from the eggs of the introduced queen may still participate for three weeks in gathering in the harvest, and thus reimburse their cost. But to begin even with inserting a queen cell eight weeks before the end of the season, leaves no hope of profit, though no mishap supervene—for we must still allow an interval of from ten days to two weeks, before brooding would be vigorously recommenced, if the colony be still populous; and if weak and broodless, as such queenless stocks usually are, brooding will proceed so slowly and listlessly that there is small chance of effectual recuperation. In short, nothing will come of it! To insert brood for queen-raising is a still more unpromising expedient; for thereby the day of relief is put off almost two weeks longer, and if the young queen is not lost on her bridal tour, we may indeed have a redeemed colony, but one that will only linger along during the remainder of the season, consuming honey and storing none. Though seemingly busy in gathering, its supplies will in the end be constantly diminishing. In the fall it will need feeding, and will notwithstanding probably perish in the winter. Whereas, had it been seasonably united with some other colony, its stores would have been preserved, and the entire population would have joined the common household as a band of busy workers. Here they would be of infinitely more service than they could be in their native hive, after the loss of their queen; for though a colony under cure for queenlessness seems to labor industriously, bees never really develope and display their full energetic activity unless there be a queen and brood present, and the entire colony feels itself to be in a normal and healthy condition. In a colony that has been queenless, revived and increased energy will therefore only be manifested when the cells are again stocked with brood proceeding from the new bred queen, requiring constant nursing and attention. Consequently where increase of colonies is no longer our object, but we desire to derive profit from the stock on hand, the attempt to *cure* a queenless colony, is a gross blunder. This is a truth, a *practical axiom* in bee-culture, flowing with logical and inexorable rigor from the recorded observations already referred to, respecting the time elapsing from the hatching of the egg to the honey-gathering of the worker.

But in the foregoing we have assumed that queenlessness occurs at a very early period in the season; whereas it more frequently occurs late, or is not discovered till late. Queenlessness most commonly occurs at the swarming season, when the old stocks are raising new queens. And it is precisely in the case of stocks that have sent forth swarms, that queenlessness is most difficult to detect, and is usually detected very late. We naturally expect that such stocks should for a time seem weak, and flatter ourselves that "when the young queen's brood hatches matters will improve." Time passes while we are thus listening to hope's flattering tale, and we finally wake up to the consciousness that there is no queen there! Now, in four or five weeks, possibly in only three, pasturage will be at an end; and shall we waste further time in "*doctoring up*" the rapidly dying invalid? Far better make short work of it, by applying the royal remedy! BREAK IT UP!

But even in so-called "fall reduction," the theoretical principle aforesaid has a practical application; for it is of great importance to the bee-keeper to know *when* this reduction is to be made. The rule commonly laid down in the books is "at the close of the season;" that is, at the time when the bees cease to increase their stores; or, in other words, when they gather less daily than they consume. In view, however, of the result of the Baron of Berlepsch's observations, as confirmed by my own, showing the time required to convert a worker bee from a consumer to a producer, the rule thus laid down would lead to gross malpractice. *The work must be begun much earlier.* Fall reduction, by the union of colonies, to effect the utmost saving and prove really advantageous, must be executed *at least five weeks before the close of the season.* For all the brood proceeding from eggs laid by the queen during this latter period, *will render no service of any account during this year.* A diminution of the brood at this period is therefore a necessity, because a large portion of the accumulated stores would be consumed by it, for which no compensation would this year be returned. But if the reduction be accomplished, by the union of colonies before the close of the pasturage, we secure the following advantages. In the first place, the working force is more than duplicated in the united stock, because in it no more workers are required to remain at home, as nurses, &c., than in either before the union. And, in the second place, the production of useless brood is diminished fully fifty per-cent., one of the queens having been discarded. By an early reduction, therefore, we secure *increased production* and *diminished consumption.* Moreover, the united colony thus formed, will be made sufficiently populous by the maturing brood of the two stocks and that further produced by the selected and retained queen, and thus become better prepared in this respect for wintering, than if the union had been deferred to a later period. At the same time we secure a larger amount of surplus honey from the superseded hive than would be obtained from it after longer delay—the honey, moreover, being more liquid, is more easily managed. Loss of queen, too, during the operation, is more easily noticed now, than later, when there is little to gather abroad, because the bees are then more disposed to remain quiet; and our own tact for vigilant attention has greatly diminished, as we feel less interest in our bees when they are idle than when they are busy.

On the whole, then, those bee-keepers, who, by means of natural and artificial swarming,

have obtained the number of colonies desired for their apiaries, and design henceforward to confine themselves to that number by reduction or union of stocks, should ponder well the period at which such reduction can be made in their respective districts, with most advantage to themselves. We often hear it said, indeed, "I have all along proceeded thus and so, and have always got on very well. Why should I change?" But the proper inquiry is whether a different or a modified process would not be more profitable? Practice in bee-culture, is nothing more than the application of our knowledge of bees in such manner as to render their labors profitable to ourselves. But the greatest profit will be reached, when, with the least possible outlay, we secure the highest attainable income. In making our calculations we must necessarily take into account, as principal items, the working time and the working capacity of the bees. Of this, it would seem, there could be no question; and we may therefore confidently adopt and repeat the counsel of the Baron of Berlepsch—"Study the theory, or you will remain practical bunglers all your days."

KÖHLER.

[From the German.]

Quality and Properties of Honey.

The quality of honey depends much on the locality where it is produced and the plants from which it is gathered. That from warm, dry, hilly districts is finer than such as comes from colder and moist regions. The best is derived from the blossoms of the esparsette, the orange, and the fig, and from labiate plants in general, growing on elevated or mountainous ranges

Drawn fresh from the comb, honey is clear, translucent, slightly amber-colored, and viscous, becoming granular in time, with whitish transparent crystals. In taste and smell it is sweet, agreeable and aromatic. It should not irritate the throat when eaten, and its peculiar flavor should be so decided, that it can be readily detected when mixed with other articles of diet.

Honey derived from the blossoms of rape and other cruciferous plants, granulates or crystallizes speedily—often, indeed, while yet in the comb before removal from the hive; while that from labiate plants, and from fruit trees in general, maintains its original condition unchanged, for three or four months, after being drawn from the comb. Honey produced in northern countries likewise crystallizes sooner than that from southern countries.

In districts producing a great diversity of plants and flowers, those which decidedly predominate determine the quality of the honey there gathered. Natural meadows, and artificial pasture grounds sown with esparsette, lucerne, melilot, white clover, lupines, &c., generally yield a very pure, white, sweet, and aromatic honey. Esparsette and heather produce a reddish or slightly rose-colored honey, having a peculiar flavor. The blossoms of some trees give a spicy or acrid honey that irritates the throat in swallowing, but is not otherwise unpleasant. The honey of the linden-tree is mild, sweet, and very agreeable to most palates. Some plants and shrubs, such as the box-wood, the blue-bottle, &c., furnish a honey greenish, pungent, and unpleasant. The nature of the soil, climate, general temperature, and even the prevalent winds, have likewise considerable influence on the quality and quantity of the honey produced in any district. Thus, easterly and south-easterly winds rapidly dry up the honey in the nectaries of flowers; and long-continued drouth prevents the secretion of nectar.

The honey most esteemed in France, and most in demand in the markets of Paris, is that of Gatinais, derived from esparsette; that of Chamouni, in Savoy, produced by balm and the flowers of labiate plants; that of Narbonne, gathered from thyme, rosemary, sage, serpolit, and other labiate plants covering the hills of Corbières, in the neighborhood of Narbonne; alpine honey, derived chiefly also from the labiates; and the honey of Argences, obtained from esparsette. The honey of the Jura mountains, also, and of some portions of eastern and southern France, is highly esteemed, and is little, if at all inferior to any of those before enumerated.

The more celebrated foreign honeys in demand in France, are, that of Mount Hymettus, in Greece; that of Mahon, in the island of Minorca; that of Mauritius, in the Isle of France, Indian Ocean; that of Portugal, Chili, &c. Foreign honey of inferior quality is also imported from Cuba and St. Domingo. Little care seems to be exercised in selecting and preparing their honey for market; and as it is not unusually mixed with such as is produced in foulbroody hives, there is always great risk in using it for feeding bees when deficient in stores. It is seldom imported into France, except in years when there is a general scarcity of European honey.

Honey is much used by bakers and confectioners in the course of their business, and by the manufacturers of mead, honey-wine, honey-beer, honey-vinegar, &c. It is substituted for sugar by pastry cooks, and the makers of bonbons, and comfits. The better qualities are kept for sale in the apothecaries. The inferior qualities are bought by the veterinary surgeons.

Honey is beneficial in pectoral diseases, acts as an excellent detergent, and as a gentle laxative. In ancient times the free and regular use of it as an article of diet, was regarded as a means of securing long life; and it thus came to be popularly considered as a specific against disease.

The chemical composition of honey is very complicated, and differs greatly in different samples. According to Dubrunfaut honey contains a small quantity of cane sugar, which becomes converted into grape sugar by the action of a ferment also contained in the honey. Mannite, a saccharine principle found in manna, celery, &c., has also been detected in honey, with two organic acids, some aromatic or ethereal oil, yellow coloring matter, a fatty substance, and nitrogen.

Honey contains more or less saccharine matter, according to the plants from which it is gathered, the climate where produced, and the

temperature of the atmosphere. French honey usually contains from 80 to 88 per cent. of cane sugar, grape sugar, and mellose—consequently somewhat less than refined sugar.

MELICHER.

[From Beechey's "Voyage to the Pacific."]

Mexican Bees.

SOME ACCOUNT OF THE HABITS OF THE MEXICAN BEE, BY E. T. BENNET, ESQ.

In the hives of the domesticated bees of Mexico, we meet with a structure altogether peculiar. They exhibit little of the regularity which characterizes the bees of the old continent, and far inferior in this respect to the habitation of the wasps. In one particular they are approximate to the nests of the European humble bees; the honey which they contain is deposited in large bags distinct from the common cells. It is somewhat singular that so interesting a point of natural history has never been particularly noticed; our previous knowledge scarcely extending beyond the facts, that some of the bees of America form nests, like those of wasps, attached to or suspended from trees, and covered by an outer case constructed by themselves; while others, incapable apparently of forming this outer crust for their hives, seek cavities ready formed for their reception, and in them construct their habitations. Instances of each of these kind of hives are mentioned by Piso, in his Natural History of both the Indies; and Hernandez, in his History of Mexico, states that the Indians keep bees analogous to ours, which deposit their honey in the hollow of trees. Little information beyond that furnished by these older writers is contained in more modern books; and even the Baron Von Humboldt, to whose acute observation science is indebted for so many discoveries respecting the New World, appears not to have noticed, with his usual care, the peculiarities of its bees. Had that distinguished traveller directed his attention to the habits of the species which he collected during his memorable journey, M. Latreille would doubtless have given to us the necessary details in his excellent Monograph of the American Bees, included in the Observations Zoologiques of M. Humboldt. In the valuable essay prefixed to his Monograph, M. Latreille has collected from authors numerous statements relating to the habitations of bees, and especially of those of America; but has added to them no new facts as regards the hives of the New World; the subject may, therefore, be regarded as altogether novel, and as requiring some little detail in its explanation.

In the domestication of the bees of Mexico, but little violence is done to their natural habits. Inhabitants, in their wild state, of cavities in trees, a hollow tree is selected to form their hive. A portion of it, of between two and three feet in length, is cut off, and a hole is bored through the sides into the hollow, at about its middle. The ends of the hollow are then stopped up with clay, and the future hive is suspended on a tree; in a horizontal position, with the hole opening to the cavity, directed also horizontally. Of the hive, thus prepared, a swarm of bees speedily take possession, and commence their operations by forming cells for the reception of their larvæ, and sacs to contain their superabundant honey collected by them in their excursions. Two such hives completely formed and occupied were brought to England, safely packed in recent hides. One of these was forwarded to M Huber, eminently distinguished for his highly interesting observations on the manners of bees; the other was presented to the Linnæan Society. The latter was carefully divided longitudinally, so as to expose its interior.

The eye of an observer, accustomed to the regular disposition of the combs in the hive of the European bee, is at once struck with the opposite directions assumed by it in different parts of the Mexican. Instead of the parallel vertical layers of comb, we have here layers, some of which assume a vertical, while others are placed in a horizontal direction; the cells of the latter being the most numerous. The cells, of course, vary in their direction, in the same manner as the comb which they form; those of the horizontal layers of comb being vertical, with their openings upward, while the cells of the vertical comb are placed in a horizontal direction. In the horizontal cells the mouths are partly directed away from the entrance to the hive, and partly towards it; the former direction being given to those cells which occupy the middle layers of the comb, and the latter to the cells which are placed on the side of the hive opposed to the opening. All the combs, both vertical and horizontal, are composed of a single series of cells applied laterally to each other, and not, as in the European hive bee, of two series, the one applied against the extremities of the other The horizontal combs are much more regularly formed than the vertical, the latter being broken, and placed at uncertain distances; while the horizontal are perfectly parallel to each other, forming uniform layers, and placed at equal distances. Between these parallel combs are processes of wax, partly supporting them, and passing from the base of one cell to the junction of the others in the next layer. These columns are considerably stronger and thicker than the sides of the cells which they support.

The cells appear to be destined solely for the habitation of the young bees; for in all that have been examined bees have been found. The bee is placed in the cell with its hinder parts directed towards the mouth of the cell, which is covered by a granular mass, probably composed of the pollen of plants. The form of the cells is hexangular, but the angles are not sharply defined, and the mouth is scarcely, if at all, thicker than the sides. In their dimensions and relative proportions they differ materially from those of the European, and still more from those of the Indian bees, as may be seen from the subjoined table.

	Mexican.	European.	Indian.
Diameter of cells,	2⅔.	2⅔, 3⅓.	1⅓, 2⅔.
Depth of cells,	4.	5, 6.	4⅔, 6.

The combs are placed together at some distance from the opening of the hive, and form a group of an oval shape, consisting of five horizontal and parallel layers, occupying the part most remote from the opening; of an interrupted and vertical layer applied to the side opposed to the opening; and of two principal and two or three smaller vertical layers in the middle. The whole of these are supported by wax, spread out into layers or processes of the same material, resting either on the wood of the cavity, or on other parts of the fabric of the comb. In these processes and layers of wax are numerous openings of various sizes, at once admitting of ready access for the inhabitants to any part of the hive, and economizing the use of the material of which they are constructed. Some of the openings are of large dimensions. The entrance into the hive is continued into a long gallery, which, to judge by the direction taken by the flexible subtance introduced into it, leads beneath the combs to their very extremity. It is therefore probable that at the extremity the work of building is commenced.

Surrounding the combs are several layers of wax, as thin as paper, irregular in their form, and placed at some little distance from each other, the interstices varying from a quarter to half an inch. One of these supports a vertical comb; the others are connected to the combs only at their edges, or by processes or layers of wax. Externally to these are placed the sacs for containing honey, which are generally large and rounded in form. They vary in size, some of them exceeding an inch and-a-half in diameter. They are supported by processes of wax from the wood of the cavity, or from each other, and are frequently applied side by side, so as mutually to afford strength to each other, and to allow of one side serving equally for two sacs. This disposition is altogether irregular, and bears some resemblance to that of a bunch of grapes. Some of the honey-sacs are placed apart from the others, forming a distinct cluster of the same general appearance as those immediately adjoining the comb.

From this singular position of the honey-sacs a most important advantage is obtained by the cultivators of the Mexican hive bee. To possess themselves of its honey it is unnecessary to have recourse to the means adopted in Europe for stupefying, and even destroying the inhabitants of the hive. All that is necessary is to remove the plug from the end of the cavity employed as a hive, to introduce the hand, and withdraw the honey-sacs. The store of the laborious bee is thus transferred to the proprietor of the hive without injury, and almost without disturbing its inhabitants. The end of the hive is then again stopped up; and the bees hasten to lay up a fresh supply of honey in lieu of that of which they have been despoiled, again to be robbed of their precious deposit. A hive treated in this way affords during the summer, at least ten harvests.

The honey is usually pressed from the sacs by the hand. Its consistence is thin, but its flavor is good, although inferior to that of the whiter honey furnished by the Spanish bee (probably our common black bee, *Apis mellifica*, L.). It does not readily ferment, some of that contained in the hive being perfectly sweet amd grateful, even after its arrival in England.

The wax is coarse in quality, its color is dark yellowish brown. The whole of it appears to be similar in texture and properties, as well that used in the construction of the cells, as that which is applied to the coarser work of forming honey-sacs and supports; the only remarkable difference being, that in the former it is apparently paler, probably owing to the layers employed being considerably thinner and more delicate.

Of the varnish-like substance known by the name of propolis, and used by the European bees to cover the foreign substances with which they frequently come in contact, scarcely any vestige is exhibited, although we have evidence of its existence. The wood of the inside of the hive, except where wax is applied to it, is perfectly naked.

The hollow of the trunk forming the hive now before us is irregular in its outline, and varies in its breadth on different points. Its average diameter, however, is about five inches. The length occupied by the cells is more than seven inches; and the total length between the extremities of the honey-sacs is fifteen inches. The number of its inhabitants, assuming that of the cells as a guide, must have been considerably under a thousand; a number trifling in comparison with that contained in the hives of the European bee, which commonly amounts to as many as twenty-four thousand.

The bee by which this nest is constructed is smaller than the European hive bee; its abdomen, especially, being much shorter than that of our common species. Like all those Mexican bees which approach in their habits to our European race, it is readily distinguished from that, and from all other hive bees yet discovered in the Old World, by the form of the first joint of its hinder tarsi, which is that of a triangle, with the apex applied to the tibia. On account of this variation in the form of a part so important to the economy of bees, modern entomologists have universally agreed in the propriety of regarding the American races as constituting a distinct group from the bees of the Old World. M. Latreille has gone further by subdividing the American bees into two genera; *Melipona*, in which the mandibles are not toothed; and *Trigona*, in which these organs are dentate. Of the propriety of this subdivision, which hitherto seemed to be supported by the general appearance of the insects referred to each group, the examination of those whose nest has just been described has given rise to considerable doubts. In it one of the mandibles is toothed, and the other is nearly entire. Its technical characters, therefore, are intermediate between the two genera, with a leaning towards *Trigona*; but its general appearance is entirely that of a *Melipona;* approaching very closely to that of a *Melipona favosa*, Latr., *Apis favosa*. Fab. That it cannot be that species, or any of the nearly related ones described by M. Latreille in the Observations Zoologiques, is evident from the dentation of its mandible, and it may, therefore, be regarded as new to science.

Some curious stories are related by the possessors as to the manners of these bees, one of which deserves to be recorded. They assert that at the entrance of each hive a sentinel is placed to watch the outgoings and incomings of his fellows; and that the sentinel is relieved at the expiration of twenty-four hours, when another assumes his post and duties for the same period. On the duration of this guard some doubts may reasonably be entertained, but of its existence ample evidence was obtained by repeated observation. At all times a single bee was seen occupying the hole leading to the nest, who, on the approach of another, withdrew himself within a small cavity, apparently made for the purpose on the left-hand side of the aperture, and thus allowed the passage of the individual entering or quitting the hive; the sentinel constantly resuming his station immediately after the passage had been effected. That it was the same bee which had withdrawn that again took his station in the opening, could not be mistaken; for his withdrawal was only into the cavity on the side of the hole, in which his head was generally in view during the brief interval while the other was passing; and that head again immediately started forward into the passage. During how long a time the same individual remained on duty could not be ascertained; for though many attempts were made to mark him, by introducing a pencil tipped with paint, he constantly eluded the aim taken at him, and it was therefore impossible to determine with certainty whether the current reports concerning him were or were not founded in fact. With the paint thus attempted to be applied to the bee, the margin of the opening was soiled; and the sentinel, as soon as he was free from the annoyance he suffered from the thrusts repeatedly made at his body, approached the foreign substance to taste it, and evidently disliking the material, he withdrew into his hive. The hole was watched to see what would be the result of the investigation of the substance, and a troop of bees was soon observed to advance towards the place, each individual bearing a small particle of wax or of propolis in his mandibles, which he deposited in his turn upon the soiled part of the wood. The little laborers then returned to the hive, and repeated the operation until a small pile rose above the blemished part, and completely relieved the inhabitants from its annoyance.

If the existence of such a sentinel as has just been described can safely be admitted, his utility would be unquestionable, as being at all times prepared to encounter a straggling stranger, or to give warning of the approach of a more numerous body of foes. Such foes actually exist in moderately sized black ants, which sometimes in small, and occasionally in large bands, attack the hive, and between which and the industrious bees desperate conflicts often take place. In these struggles the bees generally obtain the victory; but they are occasionally mastered by the overpowering numbers of their opponents.

☞ Send us the names of bee-keepers, with their Post Office address.

[From Low's "Elements of Agriculture."]

Esparsette, or Sainfoin.

Esparsette, as it is called in Spain, Sainfoin, as it is named in France, the *onobrychis sativa* of the botanist, has a perennial root, and is extensively cultivated for green food in the chalk and sandy districts of England and France. Although this species has an extensive range of the lighter class of soils, it is yet in a peculiar degree adapted to the calcareous; hence it is found growing naturally in many open downs and hilly pastures where the chalk formation exists.

Sainfoin is a deep-rooted plant, with a branching stem, bearing spikes of beautiful flowers. It grows wonderfully on rocky soils, stretching its roots to a prodigious depth amongst the crevices of rocks and open strata. It is, in truth, on dry rocky soils that the chief advantages of the cultivation of sainfoin are seen. On a chalky rock, covered with only a few inches of soil, it will thrive and grow for many years with vigor, where neither grain nor cultivated herbage plants would cover the surface. Like lucerne, although in a lesser degree, it is choked and ultimately exterminated by the prevalence of the grasses; but in a soil perfectly suited to it, as in a chalky loam, it will have a duration perhaps as long as any other plant. Although best adapted to the calcareous soils, it will grow upon any light soil which has a free or open subsoil; but on moist clays it will only last a few years, sometimes not above two.

Sainfoin may be sown with a crop in the same manner as the clovers and the grasses. In the following season it may be mown for hay or green forage, although it does not attain its full maturity until the third year. When this mode of management is adopted, the sainfoin should be mixed with one or more of the clovers, which will add to the weight of the produce, without materially interfering with the growth of the sainfoin.

When greater care is thought necessary, sainfoin, like lucerne, may be cultivated in rows, being regularly tilled and horsehoed during the summer, and manured at intervals, as every fourth or fifth year; but for the most part, it is not thought necessary to resort to this method of tillage, and the easier and more convenient practice of broadcast is preferred.

The seeds of the sainfoin are larger than those of the clovers; and when sown with the cereal grasses in spring, a little more care is necessary in covering them with the harrow and roller. The seeds should be of a good and tried kind, and perfectly fresh, for old seeds do not vegetate in a proper manner. The quantity, when sown broadcast, may be four bushels to the acre; when sown in rows, from two to three bushels. The best period of sowing is in the month of March, or early in April.

Sainfoin does not bear such frequent cutting as lucerne. When used for soiling, it may be cut twice; when used for hay, it should be cut once and the aftermath depastured. Sainfoin may be used for herbage as well as forage, and many farmers prefer depasturing it in the first

year, so that in the second it may have attained its full growth before it is mown; and this is a good practice.

Sainfoin, when it is made into hay, should, like other leguminous forage plants, be cut just when it comes into full flower. It is not very apt to be injured by heating, and therefore may be put by more quickly than other hay plants. The produce in hay is generally reckoned from one to two tons to the acre, in districts where it is cultivated; and, considering that it is grown on inferior soils, and that it yields good aftermath, it will be seen to be a productive plant.

If ground is to be mown for successive years for forage, then, on such soils as are suited to it, scarce a better crop can be cultivated than sainfoin, which is easily grown, hardy, and productive. But, with regard to this particular mode of cultivation, it cannot be at all commended. It is not the most beneficial mode of raising crops of forage; for, independently of the smaller produce, the keeping of land under any one kind of crop, and manuring it upon the surface, is to deprive the cultivated land of manure for an object which may be better attained by other means.

Sainfoin, when sown merely to produce one crop of hay, and then to be depastured for such a period as may be thought suited to the nature of the soil, answers well; but in this case, it is recommended that it be sown with a proportion of white clover and rye-grass. It is then merely a substitute for the red clover, and it is a good substitute, for it is a perennial, and will grow on soils on which the red clover cannot be profitably cultivated. It is in this way only, it is conceived, that the cultivation of sainfoin should be much extended. It may be used as a substitute for red clover in many of the sandy, dry, and rocky soils, which are intended to remain for several years in herbage.

[For the American Bee Journal.]

How I became an Apiculturist, No. 4.

The people of Wenham would not find, even in the old city of Langres, (France), a legal precedent for bee-banishment; for the policemen had transcended their powers, and when one of them, who was a near relative of my neighbor, came again to expel my bees, I being now better informed as to my rights, refused to obey, and on presenting my complaint to the Mayor, the officious official received a sharp reprimand.

On hearing of my annoyances, my grandfather proposed to wall in his orchard. He was for some years out of business, and was pleased with the thought of occupying himself with improving that ground, where he had already planted many trees. My delight was not less than his, for in my boyhood that locality had always been the scene of my rambles. The next and subsequent days we were both at work, and with the aid of the toiling laborers of my grandfather, the object was speedily accomplished. The required stones were close at hand, and as the northern and western sides were bounded with high rocks and thorny bushes, and the southern side by an old hedge, there was really only one side of the orchard to be secured by a wall.

But, while we were thus engaged, carrying the stones in a wheelbarrow, and piling them one upon another to make a good dry wall, the keeper of the ramparts came and ordered us to desist, declaring that we were within fortification limits, and no stone could be removed without leave from the officer in command. We feigned compliance, but resumed our work more vigorously when he left, for my grandfather said we might wait for months for permission to proceed, and not be sure of obtaining it in the end; but if once done they would not order the work to be demolished. My grandfather's scheme, however, included the erection of a small cottage, and when that was undertaken, the keeper of the ramparts made his appearance once more, ordering us to desist. As the commandant could not but see our new building, we had now no alternative but to apply for permission to proceed with our work. After many delays, and executing divers obligations, we were allowed to build a plank cottage eight feet square, placed on two wooden axletrees and four wheels, so that the structure might quickly be removed out of harm's way, in case of the invasion of the country by an enemy. Yet the city of Langres is hundreds of miles within the frontiers of France!

Let us now return to my bees, wintering on the roof of the house. After a stormy night in February, while the water of the melted snow was overflowing the streets, I found one of the straw coverings of my hives thrown down into the yard. On ascending to the roof, I found that the two outer boxes had been removed, and two streams of yellow water were running from the exposed frames. My spiteful neighbor had risked his neck, in order to glut his vengeance.

I confess I was at first quite disheartened. Yet, hoping that my bees were still alive, I resolved to carry them to my gandfather's. I there set them in front of a large chimney, where my grandmother lighted a fire, and I watched for hours to observe their first humming. At last I fancied I heard a slight buzzing; but the rapid beating of my heart did not permit me to hear more. Finally, a single bee came, with vibrating wings, to the edge of one of the frames, and I concluded that that swarm was alive and might yet be saved. I hastened to nail same light millinet on two bottom-and top-less boxes, in which to put my hives to prevent the bees from flying away, and then watched their demeanor. Soon many bees made their appearance outside of the frames, all vibrating their wings, till nearly the whole swarm was thus occupied. In the course of the following two days, by means of the vibrations and the warmth of the fire, the bees were as dry as ever. Very few bees, compared with what I had an icipated, were dead, and no queens were found among these. Often, in spring, the bees vibrate their wings in order to dry their wet and mouldy combs; and you

should never remove such combs from your hives, unless quite rotten, for the bees can cleanse them as soon as needed.

The hives were then transferred to the orchard, and gave me three swarms that spring, which were hived by my grandfather, who was daily engaged in improving his orchard—especially the rocky and bushy spot. One after another the unsightly bushes were removed and replaced by blooming shrubs; the sweet briers became rose bushes, and the plain old hawthorn was converted into something more attractive and imposing.

One day, that same year, I presented a nice comb of honey to a lady who was preparing festivities to celebrate the approaching birthday of her husband, and had already provided many dainties for the occasion. My honey was deposited in a closet, with other sweetmeats. This was in July just after the linden trees had blossomed, and when pasturage had become scarce from the absence of flowers. Some hours after my return, the lady sent for me in haste, as the bees had made an invasion of her closet, and she was in great dread of them. "Seeing some bees in the closet," she said, "I opened the window to let them return to their hives. I thus left them, and forgot them, till passing near the closet again I was attracted by the noise within, caused by a countless multitude." Not only was the honey gone, but all the sweetmeats had been attacked and carried off. Of course, I had to replace my honey comb, and the confectioners were called on to furnish a fresh supply of tempting delicacies.

Dissatisfied with the Huber frame hive, I resolved to try the Ravenel improved straw hive. That hive was composed of ekes, triangular bars, and a convex top. But my bees not only constructed their comb crosswise, but cemented all the ekes together. In the ensuing year, I introduced spaces between the ekes, according to Ch. Soria's book; but this only prepared convenient quarters for mothworms. I afterwards constructed two Nutt hives, in order to get as much honey as possible from my bees. One swarm gave me more than a hundred pounds of nice honey; while the other absolutely refused to work in the collateral boxes, and swarmed three times, though the hive was a so-called non-swarmer. I then made the observatory hive of De Flurieu, &c., &c.; and tried all the known improvements, more or less sur-improved by myself; but these improvements generally resulted in evils as great, if not greater, than those they were intended to remedy. My apiary, stored with all kinds and systems of hives I had heard of, advanced but so so, till, at the Paris Exposition of 1844, I encountered Mr. Debeauvoys, with his frame hive; and I resolved to transfer all my bees into that kind of hive exclusively.

CH. DADANT.

HAMILTON, ILL.

A swarm of bees gathered on a lamp-post on Broad street, Boston, recently, and was captured by the merchant to whose door they came.

[For the American Bee Journal.]

Letter from Maine.

CURE FOR ROBBING!

DEAR JOURNAL:—I can hardly see how a young apiarian can prosecute the art of "bee-keeping" intelligently, without the aid of your valuable JOURNAL. He certainly must possess more brains than the undersigned, or his success must be materially curtailed. I could not afford to do without the JOURNAL, even if its price were three times greater than it is. The subject matter is so varied in its character—much of it emanating from practical apiarians, who there record the "*process*" and *result* of their experimenting—that "*beginners*," by carefully observing the hints and suggestions given, can *at once* enter upon a series of experiments which will add much to the value of the apiary and afford them great pleasure and instruction. There is another class of correspondents, who delight to call themselves "novices" ("of whom I am which," as Nasby says), and tell what they have accomplished in their various manipulations of the hive, and their methods of procedure. In the latter class, Mr. Editor, I am deeply interested, because, from their experiments I got much that is of practical value to a beginner. Taking many of their ideas from the veterans in bee-culture, to whom we all look so confidently for counsel, carrying them out practically, and then giving your readers the *result*—whether it be *failure* or *success*. This enables me to adopt the method that proved successful, and to reject the other.

Standard works upon the "Bee and Bee Hive" are valuable; yet he would be a rare genius who could combine in such a work, the way to manage in *all* emergencies that are so continually arising. *This*, the JOURNAL nearly accomplishes, because of the large number who contribute to its columns. I would advise all bee-keepers, whether they possess one or more stocks, to subscribe for the AMERICAN BEE JOURNAL, and they will surely find in each number some suggestion that will be worth to them more than the subscription price for a year.

Now a bit of my own experience. May 19, Mr. Emerson, of Charleston, (Me.) transferred for me a small swarm of bees, from the Torrey hive to the American. But on carrying the hive to the stand, I found the roof of the house too low to admit it, and I placed it in another part of the house. The natural result of this sudden "change of base" was the loss of many bees that flew back to the old stand and perished. I soon became convinced that the queen was destroyed during the process of transferring; but knowing that the combs contained young larvæ, I felt sure that a queen would soon be reared; which proved to be the case.

June 4th, I found the hive full of robbers, that had completely conquered my little colony. Watching them carefully, I managed to entrap some two or three quarts of them. After treating them to a good *smoking*, I kept them snug and safe for four days, when I fed them by

placing in the hive a piece of comb filled with sugar syrup and water; upon which they soon worked quite freely. At sunset on the fifth day of their imprisonment, I smoked them again and let a few fly out. They returned promptly to the hive. Next morning, I let out about a dozen bees. These flew about for several minutes, apparantly acquainting themselves with the "new order of things" about their adopted home, and then off to the blossoms. From these, in due time, they all returned with stores for the young. I then removed the slide, and gave all of them the "freedom of the town," which they industriously improved. The result is an excellent swarm of bees, with a young queen safely fertilized; and all now working finely.

Mr. Editor, here, away down east, on the south of the charming Penobscot, scientific bee-keeping is yet in its infancy. Still, it is beginning to receive more attention, and we hope soon to see the branch of apiculture prosecuted with the same intelligence and enterprise that is given to agricultural pursuits.

GEORGE S. SILSBY.

WINTERSPORT, ME.

Bees and the Echo.

One should have imagined that echoes, if not entertaining, must at least be harmless and inoffensive; yet Virgil advances a strange notion, that they are injurious to bees. After enumerating some probable and reasonable annoyances, such as prudent owners would wish far removed from their bee-gardens, he adds:

"Aut ubi concava pulsa,
Saxa sonant, vocique offensa resultat imago."

This wild and fanciful assertion will hardly be admitted by the philosophers of these days, especially as they are all now agreed that insects are not furnished with any organs of hearing at all. But, if it should be urged that, though they cannot hear, yet perhaps they may feel the repercussion of sounds, I grant it is possible they may. Yet that these impressions are distasteful or hurtful I deny, because bees, in good summers, thrive well in my outlet, where the echoes are very strong, for this village is another Anathoth, a place of responses or echoes. Besides, it does not appear from experiment that bees are in any way capable of being affected by sounds; for I have often tried my own with a large speaking trumpet held close to their hives, and with such an exertion of voice as would have hailed a ship at the distance of a mile, and still these insects pursued their various employments undisturbed, and without showing the least sensibility or resentment. —*Whtie's Selborne.*

Ten millions of pounds of starch sugar syrup are annually manufactured in Switzerland, and twelve millions of pounds in France. This syrup is principally used in the breweries of the former country, and in the distilleries of the latter. Under the name of glucose it is also used in both countries by the confectioners, and as a bee-feed by bee-keepers.

[For the American Bee Journal.]

Bees often fasten frames, honey-boards, and boxes so firmly that it is difficult to remove them. By greasing with tallow the parts likely to be so fastened, they will separate readily, and the gum is easily removed. It is best to do it when the wood has not already been coated with propolis, but while still new and clean. It does not appear to annoy the bees, and they put on the usual amount of gum, but it is easily removed. CHARLES CARPENTER.

KELLEY'S ISLAND, OHIO.

Bleaching Wax.

Wax is freed from its impurities, and bleached, by melting it with hot water or steam, in a tinned, copper, or wooden vessel, letting it settle, running off the supernatant oily-looking liquid into an oblong trough with a line of holes in its bottom, so as to distribute it upon horizontal wooden cylinders, made to revolve half immersed in cold water, and then exposing the thin ribands or films thus obtained to the bleaching action of light, air, and moisture. For this purpose, the ribbands are laid upon long webs of canvas stretched horizontally between standards, two feet above the surface of a sheltered field, having a free exposure to the sunbeams. Here they are frequently turned over, then covered by nets to prevent their being blown away by winds, and watered from time to time, like linen upon the grass field in the old method of bleaching. Whenever the color of the wax seems stationary, it is collected, remelted, and thrown again into ribands upon the wet cylinder, in order to expose new surfaces to the blanching operation. By several repetions of these processes, if the weather proves favorable, the wax eventually loses its yellow tint entirely, and becomes fit for forming white candles. If it be finished under rain, it will become grey on keeping, and also lose in weight.

In France, where the purification of wax is a considerable object of manufacture, about four ounces of cream of tartar, or alum, are added to the water in the first melting copper, and the solution is incorporated with the wax by diligent manipulation. The whole is left at rest for sometime, and then the supernatant wax is run off into a settling cistern, whence it is discharged by a stopcock or tap, over the wooden cylinder revolving at the surface of a large water-cistern,, kept cool by passing a stream continually through it.

The bleached wax is finally melted, strained through silk sieves, and then run into circular cavities in a moistened table, to be cast or moulded into thin disc pieces, weighing from two to three ounces each, and three or four inches in diameter.

Neither chlorine, nor even the chlorides of lime and alkalies, can be employed with any advantage to bleach wax, because they render it brittle, and impair its burning quality.

Wax purified as above, is white and translucent in thin segments, and has neither taste nor smell.—URE.

[From the (London) Gardener's Chronicle.]

Fecundity of the Queen Bee.

In a paper read by Mr. Desborough before the "Entomological Society," on the 4th of May, he makes the following extraordinary statement. To quote from the published report of the meeting:—"The author had succeeded in ascertaining that, in certain cases, the queen bee will survive and deposit eggs during not fewer than six seasons, whereas the worker bees only live about eight months. A single queen had produced as many as 108,000 eggs, which would be about 20,000 a year. But the greatest amount of eggs was deposited during the first two years of her life; only about 15,000 being laid during each of the last three years."

With regard to the longevity of the queen bee, I have little to say, except that I do believe, as a rule, her existence extends to more than four years. In all my experience I have never known the life of any to exceed that period of time. The workers may and do live about eight months, during the autumn, winter and spring; but on an average, during the summer their lives do not exceed three or four months.

But it is with respect to Mr. Desborough's statement as to the fecundity of the queen, that I must take entire exception. A healthy vigorous queen, at the head of a strong and prosperous colony, in a well proportioned hive, instead of laying only 108,000 eggs in the course of her life of—according to the author—six years, will lay nearer 100,000 eggs in one season.

I have myself had hives in which I have been quite certain that the queen laid at least 70,000 eggs in a single year; and I have had and heard of other hives in which I have no doubt that the numbers far exceeded that amount. I have also had occasion to notice that the fertility of a queen is most abundant in the third season of her life—a great change for the worse taking place in her fourth or last year.

It appears to me most probable that Mr. Desborough drew his inferences from observations of a colony domiciled in a glass observing hive. It must be obvious to every one that bees, under such circumstances, must be laboring under very great disadvantages. Their energies are cramped in every way; and the breeding powers of the queen, as well as the working powers of ordinary bees, cannot have full scope for their developement.

S. Bevan Fox.

☞There two cases on record where the queen bees attain the age of five years—one observed by Mr. Dzierzon, and the other by the Baron of Berlepsch; though it is believed that, on an average, they rarely survive their third summer.

There is a marked difference in the productiveness of queens, even under similar circumstances of condition and age; but most of them are much more prolific than Mr. Desborough infers from his observations.

——" The Bee,
Whose busy labors wound the ear of Noon,
Finds in the winter, from his garnered store,
Quick spoliation and a bitter death."

[For the American Bee Journal.]

Bee Feeding.

Mr. John M. Price, Buffalo Grove, Iowa, writes me a description of a bee-feeder, and wants I should test it, and report through the Bee Journal. He says:—"I have mine made of a Lyman self-sealing pint glass fruit jar. Punch a few holes in the lid, and solder on a piece of the finest wove wire, such as is used in milk strainers. Then solder a piece or strip of tin around the edge of the head lid, ⅜ or ½ inch wide, so as to keep the jar or can from touching the honey-board. Fill with honey or sugar syrup, and put on the lid; now turn quickly over, and, there being no vent, the honey or syrup will not run out, only as fast as the bees suck it through the wove wire. Place it over a hole above the cluster of bees in winter."

Thank you, Mr. Price. No doubt it is a good thing; but I do not use a feeder, neither do I feed bees, except in the spring, to promote breeding, or in summer, and then in small quantities only. Now, for my method. Make your swarms early, and strengthen them up and equalize them with brood from your strongest stocks. In the breeding season, and while they are gathering honey, feed in small quantities when there is a temporary cessation of pasturage, to keep up the fertility of the queen; for recollect that the queen stops breeding if there should be two days together that the bees gather nothing, especially in a young swarm that is building comb. Should you make swarms late, do so by taking a single frame from a hive containing brood and honey, and make up a full swarm at once. This I frequently do late in the season to use up my spare queens.

By this method you will have no weak stocks in the fall. Every stock will be a No. 1, if properly managed.

In summer feeding, it is just as easy feeding a swarm of bees, as it is to feed a brood of chickens. My honey-board is in three pieces. I remove the piece where I wish to feed the bees, and sprinkle the feed in among them, or sometimes put it on a plate in the vacant side of the hive, just at night, to prevent robbing. How many will try this method, and report through the Bee Journal? Suppose you use a common box hive, your swarm can be strengthened up in summer, by drumming out young bees from a strong stock and giving them to the weak.

Mr. Price also sends a description of a novel kind of hive of his invention, and as he is sensible enough not to have it patented, we will suppose it is an excellent hive. There is no use in inflicting another patent hive on the public for the next thousand years. All use what is called the Langstroth principle, only the form is varied. When they depart from that principle, they make a move in the wrong direction.

Elisha Gallup.

Osage, Iowa.

☞ Send us the names of bee-keepers, with their Post Office address.

Pure Fertilization.

Since our last issue full accounts of the process employed by Mr. Köhler and others, to insure the pure fertilization of Italian queen bees, having reached us in the *Bienenzeitung* and other foreign periodicals, we take the earliest opportunity to place them before our readers. We trust that some of our correspondents are in a position to test the matter promptly, and having done so, will communicate the result to the BEE JOURNAL, for the benefit of its readers. We begin with

THE KÖHLER PROCESS,

described in a letter from Mr. Köhler himself, as follows:

"Now, as to the process itself. It grew out of an observation I made that, on many fine forenoons and afternoons, the air is still sufficiently warm to permit the queens to fly at times when drones have not yet issued from their hives, or after they have ceased to fly. Hence we must devise a mode of inducing Italian queens and drones to issue at times when common drones are not or are no longer flying, until the young queens reared and matured have become fertilized. The period during which drones usually fly rarely extends beyond four or five o'clock in the afternoon. Hence if we have one or more colonies containing young queens which we certainly know have not yet been fertilized, we place these during three, four or five days in a quite dark and right cool cellar, and with them also a hive containing a large number of Italian drones. Then, when a fine, clear, warm day occurs, we watch our stocks or colonies of common bees, to ascertain when their drones have ceased to fly, and as soon as practicable thereafter, the Italian colonies are to be brought out of the cellar and replaced on their stands, giving each of them a teacupful of diluted honey. The queens and drones, wearied of long confinement, and the bees excited by food and eager for release, will now rush forth precipitately, and pure fertilization of the queens is sure to be effected. We should, however, be careful to return to the cellar, every colony the queen of which has not been seen to return with the evidence of fertilization; and this must be done on every occasion, until it is certain that the object has been accomplished. This is necessary, because it is well known that some queens make repeated excursions before they succeed in encountering drones; and this is the more likely to happen when the excursions are made at a time when the number of drones abroad is restricted to those of the Italian race alone, contained in only one or two hives.

You will be satisfied, even before making the experiment, of the efficiency of this process; still "*there's nothing like trying*," and you will of course do that, to add conviction to belief.

But I will now communicate some additional information, which I feel sure will be gratifying to you. I do not know whether you prefer natural to artificial swarming. In my practice I combine both, because I can thereby, with the least possible trouble, manage to Italianize a dozen colonies by means of a single one. My process is as follows: Remove the stock from which a swarm has just issued, and set it in the place of another right populous colony. In nine days it will swarm again, by means of the bees received from the colony removed. We now remove it again to the stand of another populous stock, and it will swarm again on the second or third day. Continue this removal immediately after swarming, so long as teeting and quawking continue to be heard in the colony at nightfall. Under favorable circumstances, ten or twelve swarms may thus be obtained, as the first swarming stock furnishes the queens and the others supply the bees. Hence if you have one or two Italian stocks and feed them carefully early in the spring, beginning about the 20th of March, if the hives are well supplied with pollen, or can gather it plentifully, we may feel assured that those Italians will swarm first; and if then transposed as directed with common stocks, all the subsequent swarms obtained will have Italian queens though the bees be of the common kind.

The advantages secured by this process are very great. In the first place we obtain prime swarms with Italian queens, and these queens are almost invariably larger and finer than those which bees produce *under compulsion*. Again, we are enabled to Italianize a colony with all ease—nothing more being required than the removal and transfer of two stocks to new locations, and the work is done. I am enabled, also, to place the swarms anywhere in my apiary or, elsewhere; and thus escape the bother and perplexity ofttimes occasioned by artificial colonies, which cannot be conveniently or safely placed where we would prefer to have them. Furthermore, we know precisely when to look for a swarm a ter the first has issued; for the second will come on the ninth day after the hive has been transferred to the stand of a strong stock; the third on the third day after the second transfer; the fourth on the following day, and so on. If queens are heard teeting and quawking in the hive, at eve after removal, it may be carried into a dark cool cellar, and we may have it swarm next day at such hour as suits us. Feed it moderately, and a swarm will issue immediately after it is replaced in its stand and feels the influence of light and heat.

I would add one remark. The process for ensuring pure fertilization is reliable only when employed at the beginning of the season, while pasturage is abundant, and before any of the common stocks begin to expel their drones. It frequently occurs that particular colonies having raised young queens, begin to expel their drones as soon as those queens have been fertilized and begin to lay. I observed this in several instances last season. In such cases the drones no longer maintain regular periodicity in their daily flights, but some are occasionally seen on the wing from early in the morning to late in the evening. It is hence advisable to engage in rearing queens early in the season and to hasten that by judicious though moderate feeding.

Trusting that you may be able to make your

experiments this year yet, and that no unexpected mishap may thwart your expectations, I am yours, KÖHLER."

JULY 18, 1867.

THE KRUGER METHOD.

Mr. Krüger places the colony containing the young queen, but which must contain no drones, at evening or early in the morning in a dark and cool cellar; and places there also the colony containing the pure drones of whatever race he desires to propagate. In the afternoon of the following day, if fair, or of the first subsequent fair day, after the drones of the other colonies in his apiary or vicinage have ceased to fly, he again removes those hives from the cellar, and replaces them respectively on their former stand; feeds the bees with luke warm diluted honey, and allows them to fly. The Baron of Berlepsch assured Lieutenant Wedell that the Krüger and Köhler methods are identical.

THE GÖHDE METHOD.

On the 19th of April last, at a meeting of the Lausche Apiarian Society, Mr. Göhde, of Wittgendorf, submitted the results of experiments repeated several years, to secure the fertilization of queen bees by drones selected by the bee-keeper. "I take," said he, "a nucleus hive, and place in it a comb with honey, and another with brood, on which latter there is or has been inserted a queen cell containing an embryo queen nearly matured. I introduce in this nucleus a sufficient force of *young* bees, (choosing such to guard against desertion), and likewise from twenty to fifty drones of the variety designed to propagate from, give them an adequate supply of water; close the entrance, and place the nucleus in a cool and dark locality eight or ten days. Then on the afternoon of some suitable day, after drones have ceased to fly, say at about six o'clock P. M., bring the nucleus out, set it on the stand and open the entrance. The bees, drones, and queen will speedily issue, and in most cases the latter will be seen returning with marks of fertilization. But if this fact is not observed, the nucleus is returned to its former locality when the bees have become settled, and the entrance has been closed. It should be brought out again the next evening, or as frequently as necessary, till evidence has been obtained that fertilization is effected."

Mr. Göhde assured the Society that by this method, he had invariably secured fertilization by the selected drones, though his apiary still contained colonies of black bees, as well as of hybrids and Italians. He desires other bee-keepers to try it, and report the result.

THE FUTTER METHOD.

Mr. Fütter, principal of an academy at Stein, in the Grand Duchy of Baden, has communicated to Mr. Dathe, of Eystrup, Secretary of the Central Apiarian Society of the province of Hanover, his method of controlling fertilization, not, as he says, "with a view of securing pecuniary remuneration or to interfere to the disadvantage of Mr. Köhler, but to secure evidence of his claim to a simultaneous or prior discovery of so valuable a process." Mr. Dathe does not publish the method, as the knowledge of it was communicated to him under an injunction of secrecy; but contents himself with stating that it is *substantially* the same as that of Mr. Köhler.

DATHE'S METHOD.

When communicating the above to the *Bienenzietung*, Mr. Dathe takes the opportuiny to remark that the alleged Köhler discovery is in reality, *no new discovery* at all. That he himself made and published it a year ago, in his pamphlet "*Guide to Italianizing*," page 65. Consequently that which was published twelve months ago, cannot be a *new discovery* this year. We have a copy of Mr. Dathe's pamphlet, and on turning to it find the following passage on page 65:

"To secure fertilization after the drones have ceased to fly; we shut up in the morning the hive containing the queen and drones we design to propagate from, giving them sufficient ventilation, and placing them thus closed till evening in some dark cool place. It is unnecessary to cover the hives with an envelope to enable the bees to course over them on opening the entrance. When the drones of the other colonies in the apiary have ceased to fly, those hives are replaced on their stands, and the bees are impelled to issue and take wing, by feeding or sprinkling them with honey."

This is virtually the same method.

Having thus furnished our readers with an account of the German methods, we proceed to present to them, from the (London) *Gardener's Chronicle*, a statement of a

SCOTCH METHOD TO BREED PURE QUEENS.

Last week I alluded to the fact of the publication of a discovery very analogous to that of Mr. Köhler, by a Scotch apiarian. I have now the pleasure of supplying your readers with the details of the discovery.

The following letter appeared in the pages of a contemporary:—"As many of the readers of our journal may not be in a position to purchase the discovery of Mr. Köhler, I think they might in the meantime try the plan of an apiarian friend of mine for preventing his Ligurians from crossing.

It is this. As soon as a young queen is hatched out in a nucleus box, a number of pure Ligurian drones are selected for her companions, and confined along with her for two or three days. Then, on the afternoon of a fine day, when all other drones in the apiary have gone to rest, and the queen is judged ready to take her wedding flight, the hive is opened. As might be expected, the queen and her companions immediately avail themselves of their liberty, and a pure breed is secure.

"Should the first tour not prove successful,

the hive is again shut up, and not opened until the following afternoon." M. J.—Lockerslie.

The foregoing plan is so nearly allied to that of Mr. Köhler that I, in common with Mr. Woodbury, deemed it desirable to decline receiving any more names of subscribers at 10s. 6d. each, for the secret of the German discoverer, though at the same time feeling very sorry that he should so soon have lost the chance of receiving a little pecuniary benefit for his plan.

I have no doubt that the course of proceeding recommended by M. J.'s Scotch friend, will be found fully to answer the purpose intended. It is strange that, while feeding the young swarm and the stocks containing pure Ligurian drones, for the purpose of inducing the young queen and the pure drones to fly out earlier in the day than the drones of the generality of hives would ordinarily do, has been more than once recommended, the apparently equally simple mode of inducing them to go abroad after the usual time of flight, should have been completely overlooked.

In addition to the directions given by M. J., I would suggest that the bees confined in the nucleus, should be supplied with a little artificial food, just prior to their being allowed their liberty. I think this would stimulate both the queen and drones to take flight. I shall hope to hear of favorable results from any of our artificial queen-raising friends who may be disposed to try this experiment.

S. Bevan Fox.

[For the American Bee Journal.]

Is Puff-Ball Smoke Injurious?

One question I would like to ask: Does it hurt bees to smoke them with puff-ball? One of my neighbors keeps bees, and sometimes smokes them with puff-ball, and I have noticed that his bees do not swarm as well as others in the neighborhood. I do not know whether it is that, or because his hives are rather small, not measuring more than 1,800 cubic inches.

Rufus Stickney.

East Templeton, Mass.

☞ The use of puff-ball in fumigating bees, has been objected to, when the hives contain brood, on account of its tendency to destroy the uncapped larvæ. We never used it ourselves and cannot speak from experience, but if such be its effect, hives so treated in the spring would be very likely "not to swarm as well as others." Small sized hives would rather promote than prevent or retard swarming.

Monmouth, Ill., June 17.

Till the 10th of June, bees here did not gather honey enough for their daily need. Since that time, with the exception of three days, they have done well. They are now just beginning to swarm.

All the bees in this county are black, except eight stands, which are Italians.

T. G. McGraw.

☞ Send us the names of bee-keepers, with their Post Office address.

[From the Canada Farmer.]

Alsike Clover.

The following is an extract from a farm journal:—"May 23, 1868. Made the weekly inspection of the farm. Went first to the Colt ground, where the span of colts, now three years old, are growing into the future team. This place consists of four acres, fenced in with black ash pole, or log fence, so high that they cannot jump over, and so strong that they cannot break through. This is the true way to prevent colts from being breachy. The pasture is very rich, and is more than will be necessary to support the colts during the season.

"I noticed the Alsike clover particularly, which is now about five inches high. It possesses one unusual peculiarity, viz: that of doing best in the holes covered with water during the winter and spring. No doubt this is a valuable property as compared with red clover, which will not stand such hardship. Another thing to recommend its use is, that, before timothy or red clover is ripe enough to cut for hay, the top-flowers of the Alsike are ripe and shed their seed, which seems to catch at once and grow, as I find vast numbers of young plants, only two inches high, the results of last year's haying. Our colt pasture is an uneven piece of land, and the roots and stumps are not out sufficiently to enable us to level it yet."

This property of withstanding water in the winter and spring renders it a very useful plans for undrained farms, and reminds us of the native place of the Alsike clover, which was first discovered in the ditches of the fortifications of "Alsike," in Sweden.

[For the American Bee Journal.]

Revived Bee-Culture.

Mr. Editor:—I have always felt a lively interest in the bee question, that is, since I was old enough, though that is not yet a great many years. My father kept bees, in an old fashioned hive, for quite a number of years, or till they run out. He came to the conclusion that it was the mothworm that destroyed them; and that there was no use in trying to keep bees any longer. Thus the thing was settled, till I took it up again. I procured Mr. Langstroth's book and two swarms of bees in frames, and went at it, with the help of some of my knowing friends. The consequence was that the experiment came to a speedy termination the following winter. Since then, I have had better success. Last fall I took the first premium for honey, in New Haven county, and intend to do the same this season. I get my honey in drone comb as much as possible, and generally in small frames. These are set in a large box over the hive; and then, while the comb is built, they are moved apart gradually, till I obtain very thick combs—in fact, as thick as I please, if the season is favorable and long enough. It is very salcable—much more so than in thin comb. Then too, if the clover

season lasts longer than was expected at first, it gives more room for the yield, without the bees being required to finish and cap it with buckwheat honey.

I have about fifty or more stocks at the present time, and have had very few swarms. They are storing honey fast at present, though I had to feed considerable last spring. Those that I fed most, are doing best now. The Italians (of which I have some) were almost entirely out of stores; in fact some had not a pound of honey in their hives before I was aware of their condition. They are doing very nicely at this time; and I shall probably not have a black queen at the close of the season.

I received a queen from Mr. Langstroth—one of his twenty dollar ones. She is doing well. I have taken all the eggs away from her as fast as laid, for breeding purposes. A short time ago, I introduced a young queen from her in one of my stocks, by smoking, catching and removing the old queen, and sprinkling with honey both the bees and the young queen. I then let her go at once. I saw when looking at them to-day, that she is all right, and has been laying quite extensively. Perhaps the method would not always be safe; but I shall try it till I fail. I should not, however, recommend it where a valuable or a dear-bought queen was at stake, until it had been more fully tested.

I find in one of my stocks of black bees something that I never noticed before. Whether it is a disease or not I do not know. I never saw a notice of anything like it in any paper or books on the subject. I enclose a bee for your inspection Please report if you know what it is. You will perceive that it is something connected with the parts that secrete the wax; and I have seen some of them with the wax scales very thick and long, sticking to the body.

WILLIAM A. BARNES.

WEST MERIDEN, CONN.

☞ The bees sent were so crushed in the mail that it was impractible to separate and identify the parts referred to.

At Franklin, Ohio, recently a swarm of bees settled on the head of a horse standing in front of a church, and the owner of the horse went to his assistance. The bees settled on him too, stinging him senseless. A doctor shaved his head, and extracted fifty or sixty stings from his scalp. The horse was stung severely, The bees had come from a hive in that vicinity.

The prompt application of a few gallons of cold water, from the rose of a common watering pot, sprinkled directly on the clustering bees, would have obviated all difficulty in this case, and saved both horse and owner. A little knowledge, presence of mind, and calmness, would have been exceedingly serviceable here; for nothing is more apt to rouse the ill-temper of bees than to come in contact with a sweaty horse; and a horse is a most helpless animal, when attacked by bees.

ADVICE TO A YOUNG BEE-KEEPER.

"When you don't know what to do, don't do you don't know what."

[For the American Bee Journal.]

Response to Inquiries.

NEW BEGINNER wants my reasons for the size of hive, &c. In the first place, New Beginner is mistaken about the capacity of the hive. It contains just 2000 cubic inches inside of the comb frames; and as a good queen will occupy nearly every square inch of comb surface in said hive every season with brood, a hive of less capacity would not answer in any climate, when properly worked. I worked my most prolific queen this season, in three weeks, up to the entire capacity of the hive, and two combs over, by feeding her when required, and giving empty worker comb as fast as she used it. I selected comb containing but very little pollen. At the end of three weeks, when the first eggs laid commenced hatching, nearly every cell was occupied, even into the extreme corners of the frames. I also gave her bees as fast as she required them, to take care of the brood. If I had given her a full complement of bees at the start, they would have stored honey and restricted the capacity of the queen. Counting the two extra frames, it makes the capacity about 2700 cubic inches.

About the inclined bottom board: I used it for years. In every hive that I ever saw it was an extra expense, and no benefit whatever, but an actual damage. If you are going into bee-keeping, you want to work your frames continually from one hive to another, and from one part of the hive to another part; and you want also to turn the frames sometimes one end towards the front, and sometimes the other. The same objections hold good against the closed top bar, and frames fixed permanent at equal distances. Friend, tie up one hand for one week, there will be no great damage done; for at the end of the week you can untie it, and you can tell for certain whether you would sooner have two hands than one. Make your hive on the Langstroth principle (say you use the form that I do), with open top bar. Be very careful to have the frames made *true*, that is out of *wind*, as the carpenters call it; have the top bar jointed true, and gaged where the bearings come on to the rabbetings or strips; have the shoulders of the top bars cut true and square, so that the frame when put together is perfectly square, and when suspended in the hive hangs just where you want it, without any fixture to keep it at equal distances.

Now, if you want to try the two methods, dress out pieces one-quarter of an inch thick, one and-a-half inches wide, and tack them on to the top bar; cut out notches for the bees to pass into the honey boxes, on the same principle of the American hive; tack on little blocks or bits of tin or zinc on the side of the frame, or have a notched stick at the bottom, or a stick with wires, to keep the frames at equal distances at the bottom. Apply all this in some of your hives and try the two methods. When you are satisfied you can take off these fixtures.

To test the inclined bottom, raise the rear of the hive, in some cases, and let others set perfectly level; and if you get one cent more profit

from those with the inclined bottom, other things being equal, you will discover more than I have been able to do in nearly forty years practice, and I have been a very close observer. A hinged bottom-board is also attended with extra expense, without a corresponding benefit.

I object to the permanent bottom-board also. With the permanent bottom-board you have got to take out the frames and bees, to clean out in spring; and you will frequently want to know the exact condition of your bees in winter, without disturbing them. With a permanent bottom-board and closed top bar this is impossible. With the hive I use you can tell their exact condition at any time. You can see whether there are any dead bees on the bottom-board, or any honey on the top, &c., without any disturbance whatever.

Should you think that a side-opening hive is a good thing, make your hive enough wider to take in an inch board in place of a frame. Then you have all the advantages, without any of the disadvantages. But you will soon learn to have your comb built so true in the frame is to dispense with the loose board altogether.

New beginners want to test these things for themselves;—at least I did, when I was a beginner; and my object in telling you this is, that you can try nearly everything without being at the expense of making different hives; for nearly every one of these theories can be applied to the same hive, or the size of the frame need not be varied. A hive with a small frame is altogether ahead of a hive with a large frame, for artificial swarming, queen raising, equalizing colonies, &c. New beginners will imagine that they see advantages in this whim and the other, when there is no advantage, but disadvantage rather. At least I judge others by myself. I had that disease very hard, but am "so as to be about again," as the saying is. Some people are extra anxious to get their fingers into other people's pockets. They imagine that Mr. Langstroth is making money out of his patent, and they rack their brains to get up something different from his, so as to obtain a patent and get a share of his money or money that belongs to him. I give no great credit to any person after seeing his hive, and the principle of movable combs, for making alterations, &c. I have made a great many alterations, for the sake of testing by actual experience, yet I never thought of applying for a patent. Last week I was sent for and requested to go and see some bees in the shallow things, and I had the curiosity to measure the depth of comb, and it was just six inches.* The bees have done nothing, and cannot do anything but only live along from one season to another, fight against moths, and finally give up the ghost. Now, I have almost come to the conclusion that Mr. Langstroth never sent out such a hive. It must be some mistake of the agent or some one else. In fact, I have thought of it considerably since reading and replying to Mr. Alley. Will some one set me right on that question?

ELISHA GALLUP.

OSAGE, IOWA.

*The frames of the *shallowest* Langstroth hive ever used or seen, are *eight* inches deep. ED.

[For the American Bee Journal.]

Novice, and his Successes.

DEAR BEE JOURNAL, AND ALL YOUR READERS:

We cannot help wondering how many of you are using the comb-emptying machine, and we cannot help pitying those who do not know anything about it, for being so much behind the times. Just hear the advantages as we manage the *institution*, as our friends call it.

Well, we told you about the two story Langstroth hive which we had arranged, and what a tall colony we had ready for the white clover blossoms; and we also mentioned our plan of taking honey out before the bees could have time to cap it over. Before commencing, we selected nice worker combs for the lower or breeding apartment, and put all the drone comb above, after emptying out of it all the honey we could get, to prevent swarming. We claim this last idea, Mr. Editor; and, by the way, we can take the honey out of the frame with brood in it, in all stages, *sealed* and *unsealed*, by turning it at the proper speed, without injuring the brood at all.

Well, we took out at first fifteen pounds; and in six days more, from the upper story only, thirty-six pounds; five days after, forty-five pounds more; in six days again, twenty-five pounds; five days later, up to yesterday (July 13), forty-two pounds additional;—making in all *one hundred and sixty-three* (163) *pounds* of nicer honey than we ever saw before. And we are not near through yet, and have good reason to think that if we had taken out the honey more frequently, we should have obtained a still greater quantity. For we twice found the combs so full that the bees had begun to fill up all the little chinks about the hive; and a similar hive which we emptied only three days before the last time, had nearly as much honey as the one mentioned.

Do you know, Mr. Editor, that this seems almost incredible, especially from a locality where it is generally supposed that bees cannot be made to pay expenses? The heaviest yield from a black colony that I have heard from here is less than forty pounds in a season.

We have just received a couple of hives from Mr. Langstroth, as he makes them now; and we must say that, in our opinion, they are far in advance of the American hive, or any that we have seen. The American hive looks very well without bees in, or even with a swarm one year old; but with old heavy swarms, such as we have now, we find it a decided relief when we get round to the Langstroth hive in operating. In our judgment, we should have been several hundred dollars better off; if we had used no other than the Langstroth. There is an advantage in using the same frames above, that we do below, which can be compensated for in no other way; and this would be decidedly impossible with he American or any other form of hive that we are acquainted with, except the Langstroth.

We have another plan of our own, viz:—Have an extra set of empty combs to commence with; replace those taken out, with these, so as

to open the hives but once. Some of the hybrids object at first to being shaken off so much; but they soon learn to take it as a matter of course, and crawl back into their hives and go to work as if that was the way the bees had always done.

This plan of operating has straightened all our combs, removed all our irregularities, and equalized our stocks, so that they are rapidly becoming equally productive, one with another; and in going over the hives we can see just what each one is doing, and can supply brood or whatever else is needed, with scarcely any trouble and hardly any loss of time.

The bass-wood honey has lately commenced being brought in, and the aroma arising from our machine is equal to being right among the trees themselves. As it is sealed up in the jars immediately, we have its full flavor preserved.

Mr. Editor, we have put boxes on only two hives this season, and we really do not feel as if we ever wanted to see any more honey in boxes. It is such a miserably slow business to get them filled; and it seems to me that any one who has had our honey, clear as crystal, in the neat and clean way in which it is put up, would not care to have beeswax mixed with it any more. Our "better half" is expressing fears that we shall soon have no room for anything else than jars of honey, as they threaten to fill the premises entirely.

Mr. Editor, we are realizing our fullest expectations with our bees, and our hugest dreams of piles of honey. Hurrah for the Italians, for the BEE JOURNAL, and bee-keepers in general! May their numbers never grow less, and may they all have as much cause to be thankful as has

NOVICE.

[For the American Bee Journal.]

MURFREESBORO, (TENN.,) July 15, 1868.

S. W. Cole writes from Andrews' Chapel, Tenn., that there are no Patent Hives nor Italian bees in Tennessee. I wish to say that of Patent Hives there are, in our section of the State, several, and perhaps too many. In the spring of 1867, Mr. T. B. Hamlin, of Edgefield Junction, and ourselves, commenced to keep bees in the Langstroth hives. Mr. Hamlin commenced at once to Italianize, and now has seventy-five (75) colonies with fine impregnated queens. Mr. Hamlin obtained Italians from the best sources in this country, and also had some imported expressly for himself.

Last fall we obtained an Italian queen from Mr. Langstroth, which we did not succeed with. This season we procured several from Mr. Hamlin, progeny of both his Langstroth and imported stock, and have just destroyed our last black queen. Thus we have not only Patent Hives, but Italian Bees also, in Tennessee; and the bees are in hands who will be as likely to keep them pure as any in the country.

If Mr. Cole can call at either Mr. Hamlin's or our place, he can get about as much information in regard to both hives and bees as at any one place in the country.

MUNSON & WILLEY,
Proprietors of Tennessee Nursery,
MURFREESBORO, TENN.

[For the American Bee Journal.]

Alsike Clover.

MR. EDITOR:—I am already receiving inquiries from some of the readers of the BEE JOURNAL, about Alsike clover seed; and whether the plant is as good as recommended for bees. Others who profess to have raised it, say that after the first year it will run out. Now I am satisfied that any one who sows the *genuine* Alsike clover will, in two or three years, come to a conclusion just the reverse. It is now over three years since I first sowed it, and it is thicker on the ground this season than ever before. As for the height of it, you can judge for yourself, as I send you a sample of it to-day by mail. Some of the stalks that I send you measured over five feet in length, when first pulled up.

It is one month to-day since the bees first began to work on the blossoms. They have been on it almost like a swarm ever since, and will be for about a week longer, when I shall cut and cure it for seed and hay.

Some of my new swarms, made the first of June, have filled two boxes of honey weighing about twenty pounds each; and are now filling the third. I have divided them again, meantime. The bees of some of my neighbors, out of range of Alsike clover, have deposited but little honey in boxes, and in a majority of cases not any. The reason is, we have had extremely hot and dry weather, which prevented the flowers from yielding their usual amount of honey; and I have no doubt it had the same effect on the Alsike clover blossom. But, as I had, this season, fifteen acres of it in bloom, and only fifty stocks of bees to work on it, they of course could find plenty to gather.

I shall have a considerable quantity of the genuine Alsike clover seed to dispose of the coming fall and winter. I will give notice of it when it is ready for sale, and the price, by advertising in the BEE JOURNAL.

H. M. THOMAS.

BROOKLIN, CANADA WEST, July 13, 1868.

[For the American Bee Journal.

A Query Answered.

In reply to your correspondent, A. J. Fisher, I would say that I made several boxes long enough to hold ten frames each, from small hives wherein I had been rearing queens. I then paralyzed enough of the small colonies, as described in a former article, to make a good swarm, and put them into two of these boxes. One, having no bottom board, was set on the top of the other, and the twenty frames had honey enough to last them until Spring, when they were given some more. These swarms were very convenient for dividing up early for queen raising. They wintered as well as any swarms, although made up from a dozen or more small colonies.

We have had a cold and rather unfavorable Spring here for bees, as they gathered no surplus until after the tenth of June. Since then the weather has changed, and they are now doing finely.

J. L. HUBBARD.

WALPOLE, N. H.

THE AMERICAN BEE JOURNAL.

WASHINGTON, AUGUST, 1868.

☞ The American Bee Journal is now published monthly, in the City of Washington, (D. C.,) at $2 per annum in advance. All communications should be addressed to the Editor, at that place.

☞ Desiring to have the Bee Journal issued punctually on the first day of each month, we would request that communications intended for its pages be forwarded so as to reach us on or before the 15th day of the month in which they are sent.

☞ We desire to engage the services of well qualified ag nts, to procure new subscribers to the Bee Journal at the several County and State agricultural fairs and exhibitions, the ensuing fall. Liberal terms allowed to competent and responsible canvassers.

Pure Fertilization.

We furnish our readers, in this number, with a full account of the Köhler process for securing the pure fertilization of Italian queen bees, which cannot fail to be of interest to all bee-keepers—though it is not, in fact, a new discovery, but merely a shrewd modification or adaptation of suggestions made by Dzierzon, when first introducing Italian bees.

Other bee-keepers in Europe, it will be seen, claim to have employed similar methods simultaneously with Mr. Köhler. We have reason to know that Mr. Grimm, of Jefferson, Wisconsin, successfully employed substantially the same method several years ago, when Italianizing his apiary; and trust to be able to show in our next number, that the same or similar and equally efficient methods were devised and employed in this country, without previous knowledge of the Köhler process.

We had an unexpected opportunity to test the efficiency of the Rodelsperger bee-bob, mentioned in our June number. On the 4th of July, a swarm of bees, desiring probably to declare themselves independent of the mother stock, issued in hot haste from one of our hives, at a temperature of blood-heat in the shade, and settled on the dead limb of an old locust tree, fully fifty feet from the ground. As it was difficult and rather hazardous to climb the tree to dislodge them, and there was no ladder of sufficient length at hand, it occurred to us to try the new bee-bob. Hastily adjusting together, with suitable interspaces, four or five small frames containing empty combs, we fastened them to one end of a long light pole, and put the implement in the hands of an assistant, who ascended the tree to a point from which he could reach the cluster with it and place the bob directly over it. A portion of the bees very soon took possession of the combs. The bob was then gently lowered and its contents shaken out in front of a hive on a sheet spread on the ground. Luckily the queen was among the bees brought down at the first haul. She was at once seized and caged, and placed at the entrance of the hive designed for the reception of her and her companions. The bees still on the tree soon began to uncluster, took wing, and after whirling around erratically awhile in quest of their missing mistress, succeeded in finding her at the entrance of the hive, of which they forthwith took full possession. The queen, still caged, was then placed among them, suspended between two of the frames, and liberated next morning.

The account of this invention, given in the June number, should have been credited to the "*Bienenzeitung*," from which it was translated.

The first number of a "Guide to the Study of Insects," by A. S. Packard, Jr., M. D., has been issued from the press of the Essex Institute, at Salem, Mass. This work is intended to be not only a scientific, though popular, introduction to entomology, but also a treatise on insects injurious or beneficial to crops, and will be illustrated by nearly five hundred engravings. Such a Manual of American Entomology has long been needed, as most of the foreign works accessible, besides being costly, are deficient precisely in that which the student needs here.

The importance of a familiar knowledge of our insects, to farmers, fruit-growers, gardeners, and others, is constantly becoming more apparent, and the intelligent among them will hail with pleasure the appearance of the "Guide." It will be published in eight or ten parts, at fifty cents each. Part 3, to be issued in August, will begin an account of the *Hymenoptera* (Bees, Wasps, Ichneumon Flies, Saw Flies, &c.,) giving the distinguishing marks of the group, its structure, and special explanations of terms used in describing the various species, with their geographical and geological distribution.

[For the American Bee Journal.]

Straw Movable Comb Hive.

In the BEE JOURNAL for June 1868, page 235, Mr. J. Davis suggests a minute description of the various kinds of hives in use, with illustrations. This would be instructive and useful. As regards myself, I use a straw hive with suitable modifications to adapt it to the employment of movable frames. Mr. Langstroth, on page 331 of his work on the "Hive and Honey Bee," says:—"Straw hives have been used for ages, and are warm in winter and cool in summer. The difficulty of making them take and retain the proper shape for improved bee-keeping, is an insuperable objection to their use." Of the many board hives annually patented, the bee-keeper who practices artificial swarming, will find in the Langstroth hive all he needs. The comb frames supply all that is requisite for rational bee-culture. I have made many experiments with comb frames, broader or narrower, but am best pleased with a width of 1⅛ inch, as Mr. Langstroth directs for the upper bar.

Straw hives are unquestionably to be preferred to others; that is, if arranged for movable combs. I am very far from desiring to claim that I have the best hive in the world, as some inventors seem inclined to do; because I have not yet actually tried every kind, nor even seen them. My hive is made of straw, is square in shape, and presents all the requisites demanded in Langstroth's work on bees. It is patented and yet free, because I am a zealous friend of bee-culture. WILLIAM HENCHEN.

BLOOMINGTON FERRY, MINN.

[For the American Bee Journal.]

Wintering Bees.

I keep my bees in a deep dry cellar, where it never freezes. It is a part of the house cellar, partitioned off by itself; and has one ventilator from the top, extending outside. I carry the hives in during the first part of December, and pack them about four inches apart, and sometimes two or three tiers deep The entrances are left open, and the room kept dark and quiet. A small trap is kept set, to catch the mice.

In the fall of 1866, I carried in thirty-eight swarms. The next spring was quite late, and they were not removed until the 8th and 9th days of April, when they were all lively and smart, except one swarm, which had starved a few days before.

In 1867, I carried in fifty-three swarms. One of them had no queen, and less than a quart of bees. These perished in a short time, leaving the honey for my own use. The others all came through in extra fine condition, and were removed about the 25th of March.

I give a little upward ventilation, when possible; and always deem it essential to keep the hives open. J. L. HUBBARD.

WALPOLE, N. H.

The sounds emitted by bees, are not produced, as Gundelach states, by the attrition of the abdominal segments on each other; but by a forcible discharge of air through the spiracles of the tracheæ.

EDGEFIELD JUNCTION, TENN.

I want the JOURNAL continued, and would like to receive the first and second numbers of volume third. I would not miss having the JOURNAL for five times its cost. I have Quinby, Langstroth, and other old works of this country's production, and would take Huber, or any other work of much interest on the propagation and culture of the bee. I reside so far from any taking much interest in the bees, that I feel the want of all reliable information possible.

The queen from Italy, through Mr. Grimm last fall, is doing finely, her progeny differing from the queens from Mr. Langstroth and others by having more or larger of the white streaks on the after part of the abdomen.

I have now seventy-four stocks in Langstroth hives, and think all except four have purely impregnated Italian queens, and those four are hybrids. I can raise queens from two to three weeks sooner here, than it can be done north of Kentucky. I had young queens and drones flying on the 10th of April, and have no black bees nearer than one-and-a-half miles. All my tested queens of this season are producing pure workers One colony had sealed queen cells on the 3d of April. I have found three young queens in one stock at the same time; and an old and a young queen in each of two other colonies.

I have a young queen hatched May 20, wings and all seemingly perfect, but she is not fertile. Will she be likely to mate after so long a time?

T. B. HAMLIN.

June 22, 1868.

☞ Young queens have been known to become fertilized after much longer delay.

BARNSTABLE, MASS.

I wintered fifteen stocks last winter, on their summer stands. Most of them were in good condition in the spring. Some of them are pure Italians; the remainder more or less mixed.

Early in March, one morning after a warm day, I discovered on the platform, close in the rear of one of my hives, a cluster of dead bees about the size of a teacup; and, on separating them, found in the centre a well marked perfect Italian queen. I am unable to tell which hive they came from, or what caused them to take an outside berth so early in the season, when the nights were so frosty. The colony in the hive behind which they were found, has sent out two swarms within two weeks.

Having never before seen or read of such an occurrence, I thought I would mention it.

C. CONANT.

CARTHAGE, IND.

Inclosed please find two dollars, for which send me the fourth volume of the AMERICAN BEE JOURNAL. I cannot afford to do without it. I gained more than enough honey from one suggestion in the JOURNAL than would pay for it for ten years.

My bees are doing well.

P. W. MCFACTRIDGE.

[For the American Bee Journal.]

Bees not Dormant in Winter.

During the past winter I made frequent examinations of a strong colony of bees, kept in a Langstroth glass hive. In the morning of cold days, they could be seen concentrated in the four spaces between the five most central combs. By two o'clock of the same day, provided the sun shone brightly, the hive would become so warmed up that the bees would be found considerably scattered through the hive some on the outside combs, some in the openings of the honey board, and many even clustering between the ends of the frames and the glass in the back part of the hive, which stood towards the south, and was consequently the warmest part of the hive. At night they would retreat to the central spaces again. This I saw repeatedly with undeviating regularity—even on the coldest days, provided the sun shone out steadily and brightly all day. The object of this separation of the bees from the main cluster is, not simply to enjoy the temporary warmth produced by the sun, but to bring from their store houses, the adjacent combs, a fresh supply of food, which is again deposited in the emptied cells in the central part of the hive. The main cluster does not change its place for the purpose of reaching a new supply of food; but the new supply is brought by individual bees, *to the cluster* from the surrounding combs. On opening a hive late in the fall, you will find the old brood-cells in the central part of the hive, completely filled with honey, but not sealed over; and this supply is replenished daily, during the winter, whenever the warmth of the sun invades the hive sufficiently to allow individual bees to leave the cluster. Hence, I infer that bees, kept on their summer stands, should have their hives exposed to the sunshine, in order to warm them up daily, and give the bees an atmosphere in which they can leave the cluster without danger of freezing.

A few years ago I wished to be especially kind to a weak stock that I was anxious to winter; and for the purpose of protecting it from the cold, I covered the hive very carefully with an abundance of straw, with boards weighted with stones balanced over it so that it could not be blown away. *The bees died*, having plenty of honey remaining in the hive, but it was out of their reach. The heat of the sun could not penetrate the *two feet* of straw, to warm up the hive; the bees were too cold to move, and they perished where they stood.

Last fall I resolved to build a house for wintering bees. Since then, I have been favored with an inspection of Mr. Langstroth's new plan for wintering bees, and am so well satisfied that it is better than any house, that I have given up the idea of building, and shall winter my bees on their summer stands.

I think I shall try an experiment this winter for darkening the entrance, without closing it; in order, if possible, to prevent the loss of bees that fly out when it is too cold, or when there is snow on the ground, and are lost. It could be brought about in this way. On one edge of a board, as long as the portico of a Langstroth hive is wide, and half an inch wider than the portico is deep, nail on a thin strip of wood half an inch wider than the thickness of the board; rest this board, with the strip turned down, on two small strips of wood $\frac{1}{4}$ or $\frac{3}{8}$ inches thick, placed one in each end of the portico. You then have a covered entrance the whole width of the portico, and the strip over the edge of the board falls a little lower than the entrance, and prevents the admission of light, and also keeps out the wind.

R. BICKFORD.

SENECA FALLS, N. Y.

Bees as a Miliiary Force.

"On the same occasion the Pacha's son and sixty officers of the rank of *Aga*, were made prisoners by a truly rustic mode of assault. The Turks had shut themselves up in a church. Into this by night, the Suliotes throw a number of *hives full of bees*, whose insufferable stings soon brought the Moslems into the proper surrendering mood."—*Note on page* 270, *vol.* 22, *of De Quincy's writings. Ticknor and Fields' edition, Boston*, 1859.

ALEXANDRIA, IND.

I look upon the AMERICAN BEE JOURNAL as being worthy of the patronage of every bee-keeper, as it contains much valuable information not found in any other work on bee-culture. Works on the subject treat of it as a science more particularly, and could not reasonably be expected to give the experience of a large number of practical bee-keepers, of which we find so much in the JOURNAL. This, together with the careful study of bee-keeping as a science, will elevate that branch of industry to the high position which it so much merits.

GODFREY BOHRER.

LEWISBURG, WEST VA.

We have had but very few swarms here, this season. Not more than one colony in ten has cast a swarm. I have divided all of mine that would bear it. Some that I had in common box hives I transferred to frame hives, and divided them at the time of transferring. I gave one hive about two-thirds of the brood, and kept this one in a dark cool place for three days. To the other I gave the queen, and placed it on the old stand.

During the month of May, the weather was very severe on the bees, quite cold and wet. Considerable brood perished, even in the best of colonies, I think from cold.

The BEE JOURNAL continues to improve in interest and usefulness.

T. L. SYDENSTRICKER.

According to the statements of the dealers there, the annual consumption of honey in the city of Paris exceeds 1,000,000 cwt. There are about twenty commercial houses engaged in the trade—their transactions embracing both domestic and foreign products.

[For the American Bee Journal.]

Shallow Hives.

Well, Mr. Editor, this Gallup is getting into an awful muss, to pay for being so blunt and plain in some of his articles. But I want to tell the readers of the BEE JOURNAL that he had rather be killed outright than frightened to death. Mr. Alley, if I understand him aright, is an agent for the Langstroth hive. Now, it is not my wish to hurt Mr. Langstroth in the least, but Mr. Alley is compelling me to state some truths. I never have used the shallow things myself, but have had the care and management of them for my neighbors, and have examined hundreds of them in different parts of the West; and therefore probably know how they work as well as any other person. I have known a person to lose $600 worth of bees in one winter in those hives; another person thirty swarms—all he had; and I can show you at present such rejected shallow hives all over the West. I received three letters last week from different individuals, all stating, "I bought a right and hive from Mr. Langstroth's agent, but do not like it." "Mrs. E. S. Tupper commenced using the hive, but now uses the American," &c. In all my large acquaintance in Wisconsin and this State, I do not know of a single individual that uses them in the shallow form, and nearly all of them have purchased the right at one time or another. I am aware that our climate is altogether different from yours, friend Alley, but that does not prove that the Langstroth hive is the best in your climate. Now I could use the Langstroth hive here, and do well with it, but I could use the Champion, American, Thomas, Kidder, Lee, Bingham, and several other forms, and do better. To a large proportion of beginners I could recommend the Thomas or American form of hive very highly. Some of their fixtures I should leave out for myself; and to another proportion of beginners I would recommend the hollow bass-wood, or bee-gum, as it is called here.

Now for some of my reasons. In the hollow gum or American form of hive, the bees will commence about so many combs for worker combs, say from six to eight, and as they are tall in proportion to their size, those combs are carried down to the bottom all worker comb, and as the bees can cluster in them naturally, the queen breeds up to her full capacity earlier in the season than she possibly can in this climate in the shallow things. And the bees will winter as well, if not better, in such hives without corncobs than yours will with them. I certainly have no objection to your using corncobs. The objection I have is this, for a person to come around claiming that he has a valuable secret on wintering bees, &c., and sells that secret to my neighbors for ten dollars, and it turns out corncobs! It seems to me as though it would be more manly to tell that neighbor how to winter his bees without the use of corncobs, and tell it freely, "without money and without price."

Now, friend Alley, I have a question to ask. Where, in the name of common sense would or could the bees cluster in that form of hive, if not snug to the cobs, in winter, every time, supposing the cobs were there? For the very reasons I have stated, Mr. Langstroth ought, for his own interest, furnish a different form of hive to such of his customers as need them or require them. As near as I can understand, almost all movable comb hives contain the Langstroth principle. Mr. Langstroth no doubt obtains any quantity of testimonials from those that like the hive. But, as a rule, those that dislike or reject it scarcely ever write to him, but adopt some other form, and condemn the Langstroth principle altogether.

From a friend and well-wisher to the bee-keeping public, and all the while one of the best-natured fellows you ever saw. So pitch in!

E. GALLUP.

OSAGE, IOWA.

[For the American Bee Journal.]

In changing to Italian bees, last September, the first young bees gathering honey, or working at sunrise were nine days old. The first young Italians with pollen on their legs, were twenty-three days old, and these bore not half so large loads as the older bees. I have not seen any difference in age of honey-gathering or pollen-gathering bees noticed in the BEE JOURNAL. Perhaps the young bees do not at first gather honey for home storage, but only for their own consumption.

H. D. MINER.

WASHINGTON HARBOR, WIS.

[For the American Bee Journal.]

Early Swarms in 1868.

The first swarm of the season in latitude 41°, was from N. Hartman's Italian bees. It issued on the 15th of May; and the second swarm came on the 26th. They are from a swarm of last year which I sold him, put in a Langstroth hive, and packed with straw and a board in front, and left on its summer stand during the winter.

I do not know of any black bees, in this town, swarming till July this year.

J. WINFIELD.

CANFIELD, OHIO.

PLEASANT HILL, KY.

I am much pleased with the AMERICAN BEE JOURNAL. Instead of waning, it is increasing in interest; and I hope in patronage and circulation, as I perceive it is exerting a salutary influence on the country, and creating a wide-spread interest on the subject of bee-culture, and the investigation of its yet remaining mysteries and intricacies, and communicating the most simple and successful methods of management.

B. B. DUNLAVY.

WEST HAMBURG.

Could apiarians know the value of your JOURNAL, none would do without it. Time, I hope, will enlighten them.

MRS. WILLIAM HARRIS.